

BIOGRAPHICAL SKETCH

NAME Becker, Michael	POSITION TITLE Protein Crystallographer		
eRA COMMONS USER NAME			
EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Washington University of Delaware	Ph.D. B.A.	1990 1983	Biochemistry Biology/Chemistry

Positions and Honors:

1/2006 – present	Crystallographer Argonne National Laboratory Biosciences Division (GM/CA-CAT)
10/2005 – 1/2006	Associate Biophysicist Brookhaven National Laboratory Biology Department
10/1999 – 9/2005	Assistant Biophysicist Brookhaven National Laboratory Biology Department
10/1996 - 9/1999	Senior Research Associate Brookhaven National Laboratory Biology Department
7/1994 - 9/1996	Postdoctoral Fellow Purdue University Department of Biological Sciences
12/1990 - 6/1994	Postdoctoral Fellow Max-Planck-Institut für Biochemie Abteilung für Strukturforschung

University of Delaware Alumni Scholarship
Freshman Honors Program
Biological Honor Society
Undergraduate Research Grant
Richard M. Johnson, Jr. Memorial Award Nominee

Selected peer-reviewed publications

Woodbury, N.W., Becker, M., Middendorf, D., Parson, W.W. Picosecond kinetics of the initial photochemical electron-transfer reaction in bacterial photosynthetic reaction centers. (1985) *Biochemistry* **24**, 7516-7521.

Parson, W.W., Woodbury, N.W.T., Becker, M., Kirmaier, C., Holten, D. Kinetics and mechanisms of initial electron transfer

reactions in *Rhodopseudomonas sphaeroides* reaction centers. (1985) Antennas and Reaction Centers of Photosynthetic Bacteria -- Structure, Interactions and Dynamics (M.E. Michel-Beyerle, Editor), Springer Verlag, Berlin, pp. 278-285.

Becker, M., Middendorf, D., Woodbury, N.W., Parson, W.W., Blankenship, R.E. Picosecond electron transfer and stimulated emission in reaction centers of *Rhodobacter sphaeroides* and *Chloroflexus aurantiacus*. (1986) Ultrafast Phenomena V (G.R. Fleming and A.E. Siegman, Editors), Springer Verlag, Berlin, pp. 374-378.
Becker, M., Nagarajan, V., Middendorf, D., Shield, M., Parson, W.W. Excited-state properties of bacteriochlorophyll-a and of bacterial photosynthetic reaction centers as revealed by picosecond absorption studies. (1990) Current Research in Photosynthesis, Vol. I (M. Baltscheffsky, Editor), Kluwer Academic Publishers, Dordrecht, Holland, pp. 101-104.

Becker, M., Middendorf, D., Nagarajan, V., Parson, W.W., Martin, J.E., Blankenship, R.E. Picosecond absorption studies on photosynthetic reaction centers of *Chloroflexus aurantiacus*. (1990) Current Research in Photosynthesis, Vol. I (M. Baltscheffsky, Editor), Kluwer Academic Publishers, Dordrecht, Holland, pp. 121-124.

Becker, M., Nagarajan, V., Middendorf, D., Parson, W.W., Martin, J.E., Blankenship, R.E. Temperature dependence of the initial electron-transfer kinetics in photosynthetic reaction centers of *Chloroflexus aurantiacus*. (1991) *Biochimica et Biophysica Acta* **1057**, 299-312.

Becker, M., Nagarajan, V., Parson, W.W. Properties of the excited singlet states of bacteriochlorophyll a and bacteriopheophytin a in polar solvents. (1991) *Journal of the American Chemical Society* **113**, 6840-6848.

Becker, M., Stubbs, M.T., Huber, R. Crystallization of phycobiliproteins of the cryptomonad algae using detergents and unusual additives. (1996) *Biophysical Journal* **70**, A131.

Becker, M., Stubbs, M.T., Huber, R. Crystallization of phycoerythrin 545 of *Rhodomonas lens* using detergents and unusual additives. (1998) *Protein Science* **7**, 580-586.

Becker, M. Preliminary considerations on the possibility of using hard X-rays from a Free Electron Laser to determine structures of membrane proteins in 2-dimensional crystals. (1999) *Biophysical Journal* **76**, A121.

Becker, M. Considerations on the possibility of using hard X-rays from a Free Electron Laser to determine structures of membrane proteins in 2-dimensional crystals. (1999) in "Transparencies from the EMBO Workshop: Potential Future Applications in Structural Biology of an X-ray Free Electron Laser at DESY", EMBL, Hamburg, pp. 184-198.

Becker, M., Bunikis, J., Lade, B., Dunn, J.J., Barbour, A.G., Lawson, C.L. X-ray crystal structures of the C-terminal domain of Outer Surface Protein B of *Borrelia burgdorferi* alone and in complex with a bactericidal Fab. (2001) *Biophysical Journal* **80**, 60a.

Becker, M., Berman, L. Frontiers in Structural Biology at High-Brightness X-Ray Sources. (2001) *Synchrotron Radiation News* **14**, 7-9.

Becker, M., Weckert, E. On the Possibility of Determining Structures of Membrane Proteins in Two-Dimensional Crystals Using X-Ray Free Electron Lasers. (2004) in "Conformational Proteomics of Macromolecular Architecture" (R.H. Cheng, L. Hammar, Editors), World Scientific Publishing, Singapore, pp. 133-147.

Becker, M., Bunikis, J., Lade, B., Barbour, A., Dunn, J., Lawson, C.L. Structural Investigation of *B. burgdorferi* OspB, a Bactericidal Fab Target. (2005) *Journal of Biological Chemistry* **280**, 17363-17370 (published on-line, Feb. 15, 2005).

Bai, T., Becker, M., Gupta, A., Strike, P., Murphy, V., Anders, R.F., Batchelor, A.H. Structure of Apical Membrane Antigen 1 from *Plasmodium falciparum* reveals a clustering of polymorphisms that surround a conserved hydrophobic pocket. (2005) *Proceedings of the National Academy of Sciences, USA* **102**, 12736 – 12741.

Kozyrev, A.N., Alderfer, J.L., Barkigia, K.M., Becker, M., Fajer, J., Robinson, B.C. Synthesis and Spectroscopic Characterization of Novel Near-IR Absorbing Bacteriochlorins Related to Bacteriochlorophyll a. (2006) *Journal of Organic Chemistry – in press*.